BARTON-ASCHMAN ASSOCIATES, INC.

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DUKANE VALLEY AREA
DEVELOPMENT STUDY

Prepared for Real Estate Research
Corporation by Barton-Aschman
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FOREWORD

In 1966, the Atomic Energy Commission announced that the National Accelerator Laboratory (NAL) would be located on a site adjacent to Weston, Illinois, in DuPage and Kane Counties. The site for this international facility covers 10 square miles. The National Accelerator Laboratory is an important addition to a growing complex of research-oriented institutions in the two-county area.

The Department of Business and Economic Development of the State of Illinois recognized that NAL could have a profound effect on the adjacent area. To develop an understanding of this effect, Real Estate Research Corporation was commissioned by the department to analyze the accelerator's impact on a study area which includes all of DuPage and Kane Counties.

In addition, local leaders began meeting to discuss development opportunities for the area. These deliberations led to the formation of the DuKane Valley Council. It consists of representatives of 14 municipalities, two counties and six private organizations.

To complement these efforts, a land-use development study was undertaken to suggest concepts for an orderly process of land development in the area immediately surrounding the NAL site. This report presents

the findings of that study. Initially, the study area was comprised of a two-mile band around the accelerator site, but later was rounded out to include the total municipal corporations of Batavia, Geneva, North Aurora, Warrenville, West Chicago, and the northern part of the City of Aurora. In this report, the study area is referred to as the DuKane Valley Area.

Much of the background information needed for this study was obtained from existing planning studies. Of special importance are the Comprehensive Development Impact Study conducted by Real Estate Research Corporation, the Northeastern Illinois Planning Commission's Regional Plan and Technical Studies, and the Fox Valley Transportation Study.

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INTRODUCTION

The DuKane Valley Area is entering a new phase of accelerated growth, the volume and rate of which will be determined primarily by metropolitan expansion. The population in the five townships which are included in the development area will increase to over 103,000 persons by 1985.[1]

While much of the surrounding farmland remains under cultivation, the eminence of development pressures cannot be denied. The amenities of the landscape, the availability of large undeveloped tracts, and accessibility to the metropolitan region assure continued growth. To plan for an orderly future, the DuKane Valley Area must recognize two essential facts:

Growth is inevitable.

Growth will occur predominantly on undeveloped land. Accordingly, the concepts established in this report emphasize the coordination of development on vacant land within the context of local and regional plans.

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[1] *Preliminary Report V, Projections of the Population and Economy With and Without the Accelerator, Volumes 1 and 2,* Set "B" Projections Real Estate Research Corporation, 1969.

The coming of people, changes in development patterns, and unprecedented physical growth are creating a new situation in the DuKane Valley Area. However, the outcome need not be sporadic, uncontrolled development representing only short-term benefits. Proper planning, based on realistic information and area-wide cooperation, can channel this growth toward desirable ends. The purpose of this report is to design an effective planning format which can guide development toward a rich and coherent urban environment. The study proposes a planning program which stresses fundamental development policies and a process for translating these policies into day-to-day decisions. This type of program is best suited to guide and help shape development under the circumstances of accelerated growth and continual change. The concept is based upon the *situation* in the DuKane Valley and not on the geographic limits of the study area. Geographically, it is part of the northeastern Illinois region and has been approached within the framework of the NIPC regional plan.

This report is divided into five chapters. In the first, goals for development are outlined. The second chapter proposes and discusses a planning program which is suited to the characteristics of the study area and designed to help communities achieve the stated goals. The thrid chapter presents the development factors of major importance. The fourth chapter presents the proposed DuKane Valley Area Policies Plan. The fifth chapter suggests methods of implementing the planning program.

DEVELOPMENT GOALS

Chapter 1

DEVELOPMENT GOALS

The basis for all planning activities are the goals of the people who will be affected by the program. The development goals for the DuKane Valley Area are based on the comprehensive and specific goals of the metropolitan region as stated by the Northeastern Illinois Planning Commission. These goals identify the kind of urban environment that should be achieved as development takes place, and they form the basis for identification and evaluation of the specific proposals made in the Area Policies Plan.

To achieve the goals of the study area, they must be translated to development policies. These represent an "action approach" to the major factors which determine an urban environment. Chapter 3 describes these factors and lists the development policies germane to each. For a complete discussion of goals applicable to the DuKane Valley Area, refer to *The Comprehensive General Plan for the Development of the Northeastern Illinois Counties Area.*[1]

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[1] Northeastern Illinois Planning Commission, 1969.

FUNDAMENTAL GOALS

Four fundamental goals can be identified for communities in the DuKane Valley Area. New growth should be channeled so that it will be compatible with achievement of these goals, and all development policies should be judged according to the impact they will have on the goals.

1. The major community goal is the continued improvement in the quality of life and opportunities for all individuals. The physical expression of the communities should provide a framework for increased choices in the full range of human activities.
2. The economic health of the study area should be promoted so that the individual communities are enabled to participate most effectively in the national and regional economy.
3. A better adjustment between man and his total environment is necessary to realize both functional and aesthetic advantages.
4. Greater convenience in our daily lives and higher standards of health, beauty, and variety in our surroundings is necessary to achieve an attractive, healthful and convenient environment.

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A PLANNING PROGRAM FOR AREA DEVELOPMENT

Chapter 2
A PLANNING PROGRAM FOR AREA DEVELOPMENT

A plan should reflect the policies and objectives of the area for which it is designed. Traditional planning has approached this responsibility with a well thought out document, which proposes generalized locational and density decisions for various types of land-uses. These are then implemented by zoning codes and subdivision regulations. Such land-use controls specify geographic limits for specific uses and detail the conditions under which such uses can be realized. One of the difficulties of a static land-use plan on undeveloped land is that the ideal it establishes is often extremely difficult to implement, no matter how realistic the plan may seem.

PLANNING GROWTH AREAS

A successful development concept must be related to the characteristics of land-use decision-making and the circumstances surrounding the development of vacant land on the metropolitan fringe. Public agencies have only limited authority with respect to shaping development decisions. Land-use decisions are made by a multitude of private and public participants, leading to the incremental evolution of a land-use pattern.

Planning by the public sector is most effective if it concentrates on establishing a framework within which these decisions can be made.

The basic characteristic of metropolitan growth areas is change. This is especially relevant to vacant land suitable for development. Over a given period of time, the dimensions and directions of growth are altering due to changes in the multitude of factors influencing development and land-use decisions. The major factors which produce change are market trends and variations in market pressures on specific parcels of land; major public improvements, particularly highway development; changes in public taste and in technology; and locational decisions for major facilities made by both the public and the private sectors.[1] The fact of growth, once it is translated into bricks and mortar, also creates change in terms of influence upon adjacent land parcels, community facilities, and natural resources.

Another basic characteristic of the land under development pressure in the DuKane Valley Area, as in most other areas, is that it can be developed for more than one type of use. Particular parcels of *agricultural* land do not, by their inherent nature, dictate a specific future use.

In order to achieve the development in the DuKane Valley Area, the development concept must:

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[1] The Atomic Energy Commission's decision to locate the National Accelerator Laboratory at its present site is a prime example of this type of change.

- Provide maximum choice for developers and land owners within the context of community goals.
- Avoid giving land-use monopolies to land owners on an arbitrary basis.
- Encourage creative site planning and design.
- Guard the area against unwarranted land speculation which can thwart policies of land development adopted by the communities.
- Stimulate development of organic communities more in line with the values of urban life by permitting the intermingling of residential densities, unified multipurpose centers, and natural landscapes in highly developed areas.
- Provide for timeliness of development to ensure efficient programming and use of community improvements and to avoid vacated land and buildings.
- Protect and preserve land of particular value for recreation use and ecological balance.

DEVELOPMENT POLICIES CONCEPT

In order to accomplish these objectives under the circumstances of change and growth, the DuKane Valley Area should base its development activities upon a *policy planning process*. This planning process designates *development policies* rather than a land-use plan as the fundamental element.

There are three types of development policies. They are similar in that they are derived from the goals and objectives of the study area. They differ in their application to the policy planning process.

Structural Policies

Structural development policies establish the criteria for the designation or location of the elements which provide the overall framework for growth. These elements are the intensity of land-uses in a given area, the location of highway facilities, and the capacity of utility services. Handling these elements through development policies makes them responsive to changes in development factors.[2] As these development factors change, the intensity pattern, for example, will adjust according to the development policies to keep the planning program up to date and relevant.

Standards and Criteria Policies

These policies provide for the establishment of standards and criteria upon which to judge specific development proposals at the time these proposals are made.

Functional Policies

The development policies also deal with goals and objectives which reflect the values and desires of the region and local communities. Not all of these can be translated to intensity of land-use. Those which relate to community development, urban and area-wide design, socioeconomic values, and mobility are prime examples. The structural and

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[2] Development factors include the natural resources, existing land-use, transportation system, utility systems, and economic demand.

functional development policies are integrated in the *Area Policies Plan* (see page 32). The Area Policies Plan is not a land-use plan. It is a graphic interpretation of both the structural and functional elements of the development policies. It is flexible in that it will change as development factors change the intensity pattern.

By avoiding the delineation of types of land-use in specific geographical areas, the planning program can provide the flexibility needed to accommodate growth and change. The important distinction in this concept is that development proposals will be reviewed at the time they are offered, thereby eliminating the lag between public planning and private development. The concept also provides maximum choice for the private sector within the standards and criteria which safeguard the objectives and values of the public sector better than traditional self-regulating controls. It will allow for more creativity and imagination by all participants in all phases of urban design. Furthermore, it will allow local plan commissions to focus more attention on planning. Commissions will not be judging proposals on the basis of compliance with zoning ordinances but, instead, measure them on development policies and planning standards. This will allow time for these responsible bodies to keep the planning process up-to-date and in tune with changing circumstances so that as proposals come before the commissions, they can be examined in depth and in relation to prevailing conditions.

THE POLICY PLANNING PROCESS

Intensity Sectors

A distinction must be made between developed and undeveloped land. Built-up areas do undergo constant change, but the rate and scope of change is such that it can be handled under conventional procedures. This is not the case with agricultural and open land. First, this land is most vulnerable to intense development on a large scale.[3] Second, an appropriate rationale cannot be found for assigning such land to a specific type of use on the basis that it is singularly suited for that use. It *can* be determined to be most adequate for a particular *intensity* of use; however, based on development policies. Therefore, a frontier needs to be established which will make a distinction between developed and undeveloped land, with each district implemented in the appropriate manner based on the Area Policies Plan.

Developed areas can be handled through conventional implementation procedures based on the Area Policies Plan and more specific plans adopted by the local communities. Undeveloped land should be put into sectors which refer to intensity of use and function rather than type of use. These sectors function like holding zones which are not self-regulating but for which development regulations will be created according to the standards and criteria established by the development policies.

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[3] Intense development is a general indication for various land-uses which, by their nature, dominate the land, promote high levels of vehicular traffic, and necessarily, lead to extensive public investment in utilities, police, fire protection, educational facilities, etc.

Zoning

Within each intensity sector, a developer should have a certain range of zoning classifications to which he can apply. In this way, the appropriate uses and appropriate densities can be channeled to their proper sector. The developer would have more flexibility and more choice as to type of development he may wish to build, but only within a range established by public policy. For example, a high-intensity sector could be zoned for high-density residential, medium-density residential, a planned unit district, commercial and office center, etc. The intensity zoning regulations would not allow, on the other hand, the sector to be zoned for estate development or low-density residential use.

The plan commissions in the study area would be charged with keeping the Area Policies Plan up-to-date and designate intensity areas as major structural changes occur and development proceeds. Review on an annual basis is sufficient to keep it abreast of change. Ideally, intensity sector adjustments would be designated ahead of any structural development which would cause a change in the intensity pattern. A time period of two to three years in advance of major change would allow sufficient time to prepare and review proposals.[4]

Positive Control Techniques

To match the flexibility the development policies approach provides, the policy planning process builds upon positive zoning techniques to

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[4] For further detail see Part 1, "Technical Supplement to the DuKane Valley Area Development Study."

implement the development policies.

To expand maximum choice and flexibility within intensity sectors, local authorities should consider planned unit development districts as a zoning district for which developers could petition. There should be a category for planned residential districts, planned industrial districts, and diversified activity center districts for high-intensity sectors.

The use of average-density provisions for residential areas and for planned neighborhood developments also is recommended for inclusion in the zoning process. This will allow the study area to take advantage of cluster developments. This concept generally designates a maximum number of dwelling units (detached or multiple) per acre of land. However, these units are grouped together in a cluster rather than evenly distributed on specific size lots.

Clustering has several advantages; it will encourage variety in design, preserve natural resources and unique topographic features, and provide more usable open space. Finally, clustering provides many economies of scale, including lower cost for streets, utilities, and land preparation.

The development area should establish incentives for the developer to help promote the best design possible. Such incentives might include density allowances for good site design and tax assessment according to the level of intensity an area is designated.

Development Frontier

All areas under county jurisdiction should be considered to be subject to this development process. In addition, the individual communities may wish to coordinate the development of their open land within the city limits through the same process. To do this and still maintain their jurisdictional integrity, the development staff would report directly to local authority with recommendations on particular proposals for development within the corporate boundaries. In this way, the development frontier would more logically follow actual existing land-uses rather than political boundaries.

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MAJOR DEVELOPMENT FACTORS

Chapter 3
MAJOR DEVELOPMENT FACTORS

The development policies are concerned with the factors which influence and are, in turn, influenced by urbanization. The policies previously discussed represent the course of action suggested for the management of these development factors, in order to achieve stated goals and objectives. These basic factors are:

- The Natural Resource Base
- Existing Land-Use
- The Transportation System
- Utility Service Facilities
- Population and Economic Forecast

NATURAL RESOURCE BASE

The natural resource base includes all the discrete elements of nature. They range from the air we breathe to the bedrock underlying the land. Together they form the natural environment which provides the structure for urban development and the amenities to make a quality community. Effective area-wide planning must recognize the limitations and potentials of its natural environment.

The development area environment provides aesthetic and functional services. It is a vital element in the area's economic health, in the

provision of basic services, and in its ability to build a proper environment. Urban growth must be planned within the capacities of natural environment in order to ensure a pleasant, habitable, and efficient environment. To ignore this condition is to invite a physical structure devoid of natural beauty, municipalities burdened with unnecessary cost, and urban sterilty hardly consistent with physical and mental well-being.

Functional Considerations

A stable environment offers the development area an exhaustive list of functional benefits and amenities. Woodlots and forests help moderate drainage problems and flooding. Geologic formations store local water supply needs. Soils support vegetation but also vary in the degree they accept urbanization gracefully. Wet lands hold the ingredients that support the plant and wildlife cycle.

Developing the area within the dictates of the resource community benefits the private and public sectors by preventing conditions which would require costly adjustments. Prudent foresight now will allow future tax revenues to be applied to productive projects rather than corrective measures.

The following natural resource inventories are germane to the NAL Development Area:

- Soil Surveys
- Groundwater and Surface Water
- Pollution Potential
- Mineral Resources
- Geologic Foundation Conditions

- Drainage Patterns
- Land Formations
- Plants and Wildlife

The opportunity presently exists to compile detail inventories of these elements before heavy development activity begins in the development area. *Generalized* surveys were compiled by the Soil Conservation Service of the United States Department of Agriculture and by the Illinois Geologic Survey for this report. The generalized nature of these inventories give indications of generalized policy. More detailed inventories are necessary, and they are available to the communities.[1]

These inventories and their interpretations can be synthesized to produce a land suitability for urbanization map which will record all pertinent natural resource criteria in detail. By using this technique, a complete understanding of the natural environment can be gained since potentialities or limitations may overlap or conflict. A generalized land suitability map based on the studies undertaken for this report, follows. This is an interpretive map which combines the level of limitations or lack of limitation from each of the following:

- Soil Survey
- Groundwater and Surface Water
- Pollution Potential

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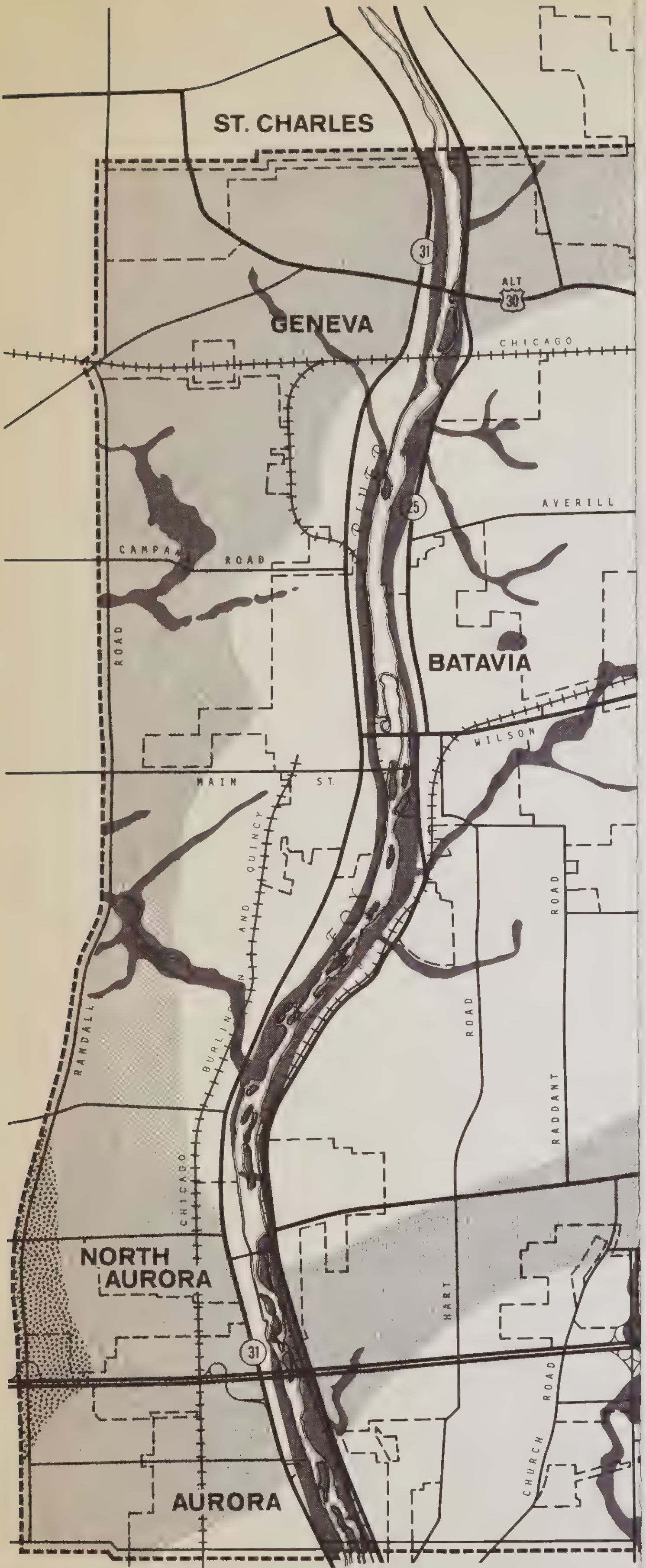
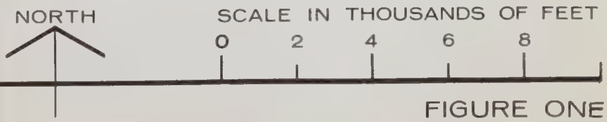
[1] These generalized studies should not be interpreted as being adequate for detail site interpolation. They are neither intended for this purpose nor accurate enough to be used so.



LAND SUITABILITY FOR URBANIZATION

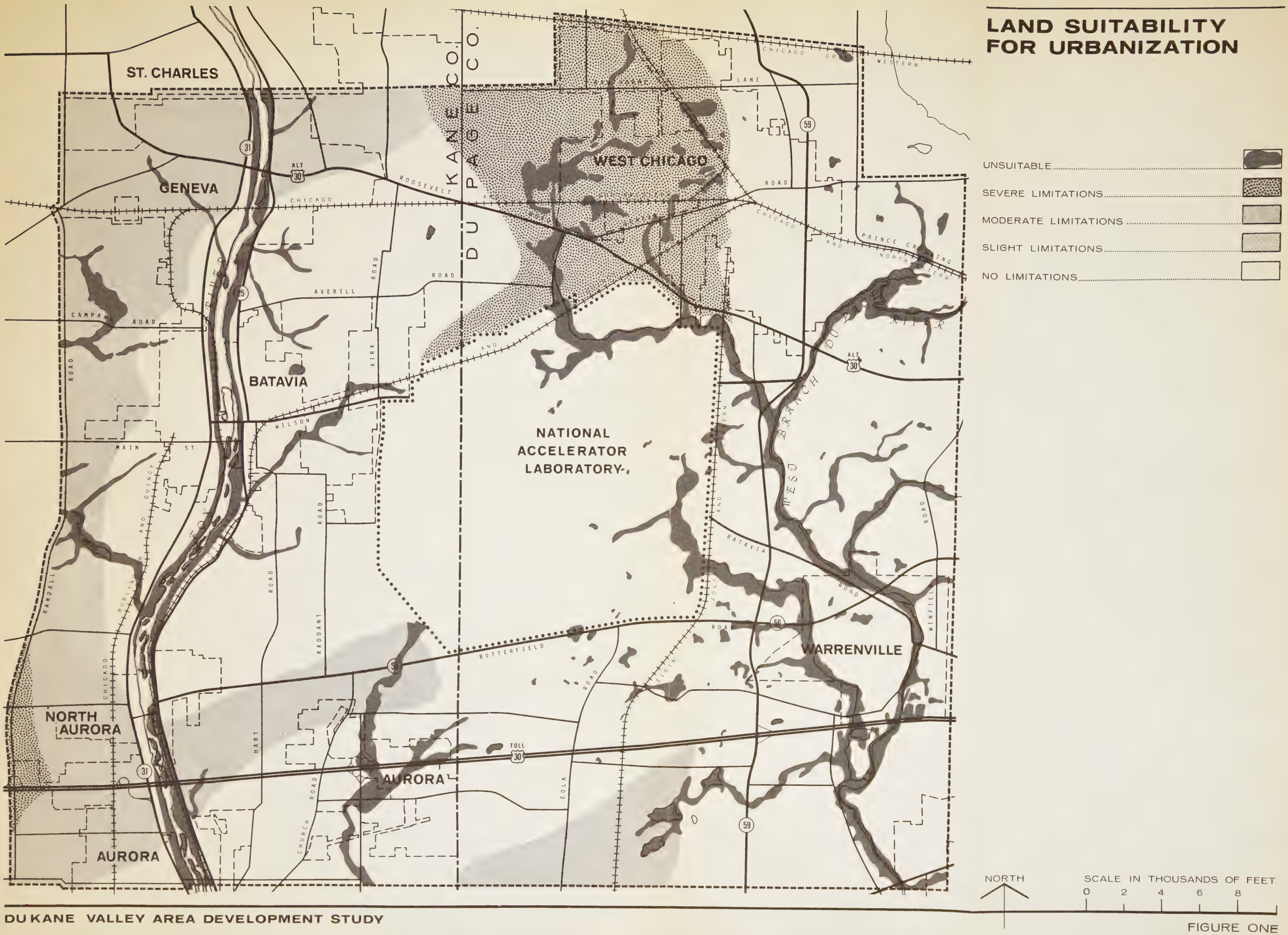
UNSUITABLE	■
SEVERE LIMITATIONS	▨
MODERATE LIMITATIONS	▩
SLIGHT LIMITATIONS	▒
NO LIMITATIONS	☐



DUKANE VALLEY AREA DEVELOPMENT STU

FIGURE ONE

LAND SUITABILITY FOR URBANIZATION



DUKANE VALLEY AREA DEVELOPMENT STUDY

FIGURE ONE

- Foundation Conditions[2]
- Mineral Resources

The following development policies are related to the functional dimensions of the natural resource base.

Structural Policies

- Intense development should be confined to those areas with soil characteristics suitable for urbanization.
- Areas of high pollution danger which jeopardize the area's water supply, public health, or natural beauty should be put into conservation or open space uses. Locational decisions for urban facilities and landfill operations must be based upon the rational interpretation of pollution hazards.
- Urban areas should be located where the groundwater resource is adequate for the particular intensity of development.
- All construction should be prohibited in 50-year floodplains area.
- The NAL Development Area should put valuable mineral resource land into uses which do not conflict with future exploitation of the minerals.

Standards and Criteria Policies

- Detailed inventories with interpretations for land-use planning purposes should be prepared for all elements of the natural resource base. These inventories and interpretations should be periodically updated and accessible to all land-users. Natural resource studies should be synthesized into a land-use suitability map. This map

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[2] For further detail see "Technical Supplement--DuKane Valley Area Development Study," Part 2.

shall be kept up-to-date and available to all. It will be a major standard upon which to judge individual development proposals.

- The construction of all private buildings and public facilities should be preceded by detailed site evaluation to determine the adaptability of the geologic and soil formations.

Functional Policies

- The surface or Silurian dolomite aquifer should be exploited to serve day-to-day needs. Ancillary wells in the deep sandstone aquifer should be used only as a reserve source.
- Reclamation plans should be submitted and adopted for all mines before mineral extraction begins. Appropriate bonding procedures should guarantee reclamation according to the accepted plan.
- All development proposals should be considered as to their effect on the drainage system of the site.

Visual Considerations

The visual environment can be defined as that dimension of the resource community which gives the development area its image and character. Residents and visitors sense the quality of the environment, enjoy its beauty, and are revitalized by the richness and variety of the landscape. Although the unique character of the land is a result of the total ecology, it is necessary to investigate elements of visual character and analyze their relationship to the ecological cycle. Three basic elements interact to produce the area's visual identity. These

are: the major land formations, the plants and wildlife indigenous to the area, and the urban design imposed on the land. Another element which needs consideration is the process of construction itself, especially the land preparation phase.[3]

Based upon the existing background studies undertaken for this report, a generalized urban design framework for the development area can be outlined. The moraines should be the areas of most intense development. These areas are best able to support high-density uses and, in turn, soften the effect of such uses by absorbing them among its slopes and foliage. The highest density uses, particularly high-rise facilities, are appropriate for the moraine top where they will serve to accentuate the contrast with the flat plains. The moraine slope should be sites for work space and housing. Industry should orient to the agriculture plain and the living areas should orient toward the rivers.

The river basin can best be used as focal points for locally oriented activities. Homes, churches, schools, shops, and cultural activities can best be absorbed in these well defined and serene locations.

The flat plain should remain as open as possible. The NAL facility will accomplish a good part of this objective. Poor land for urbanization adjacent to the NAL site should remain in agriculture or be developed in small clustered hamlets where septic systems can function, so the vistas of the plain are safeguarded.

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[3] For further detail see "Technical Supplement--DuKane Valley Area Development Study," Part 2.

The following development policies are related to the visual aspects of the natural resource base:

Structural Policies

- The flat plains between the two river basins should be held out of intensive development. Appropriate development for such areas could be large estates, research-office, or institutions where the building-to-land ratio is extremely low. Areas not suitable for any development should be maintained in agriculture.

Standards and Criteria Policies

- Studies should be undertaken to identify and determine the critical limits of resistance of natural plants and wildlife to urbanization. Development proposals should be consistent with the objective of saving these elements.
- The local municipal and county building codes should include the process of construction as it applies to land as well as buildings.

Functional Policies

- Development should be channeled so that both the natural and urban environment produce a pleasing and varied visual environment. All development proposals shall be reviewed according to their compatibility with this policy.

EXISTING LAND-USE

Existing land-uses are the physical expression of the history and status of the present communities. The generalized land-use studies used in this study point out a number of facts which related to planning for the future.

First, the DuKane Valley Area communities have developed as independent urban units providing work space, commercial centers, institutional acreage, and recreation areas as well as living areas. Second, these communities have attempted to maintain a cohesiveness, both in terms of identity and neighborhood developments. The family unit seems to be the focus of the urban pattern. The intensity of the communities, the pace of activity, and the interaction between citizens is a direct consequence of this pivotal objective. The towns have committed themselves to becoming full communities providing places for the complete array of human activity.

These communities also are an integral part of a metropolitan, state, and national community. The citizens of the study area have economic, political, and social ties and responsibilities which cannot be separated from the objectives centered upon their local communities.

The existing communities in the NAL Development Area are part of the regional urban pattern evolving as a semicontinuous lineal form extending along the Fox River. West Chicago and Warrenville will be at the outer edge of this urban pattern but are fittingly part of the development by reason of economic, social, and physical orientation.

Within this regional form, the towns and villages are sited on historically important focal points such as river crossings and transportation intersections. The communities have developed central orientations and are separated from one another by belts of open land in agricultural, institutional and recreational use. The DuKane Valley communities should conform

to this regional pattern as it can be an appropriate vehicle to shape the individual communities according to development policies.[4]

The following development policies relate to the existing land-use pattern and pressure for future community growth.

Structural Policies

- Development should be channeled so that compact and distinct communities will continue to typify the development area. New growth should be contiguous to existing land-use arranged so that metropolitan-oriented uses and activities border local-oriented uses and living area.
- Residential areas should be planned as a neighborhood unit. A variety of housing types, sizes, and price range should be made available.
- Industrial development should be located where appropriate accessibility is available. All utility service should be provided in advance of industrial parks and office centers development. A variety of locations for light industry, office-research, and government uses should be provided to expand opportunities for employment. Heavy manufacturing should be restricted to sectors away from living areas.

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[4] For further detail see "Technical Supplement--DuKane Valley Area Development Study," Part 3.

- Convenience centers should be integrated within neighborhood developments. They should be designed as part of the total units so that they can be safely reached by pedestrians.
- Highway commercial development should be channeled into nodal service centers, well spaced to avoid intrusion upon visual environment, and be restricted to highway services which do not endanger the economic viability of town centers.
- The land with resource limitations for urbanization should be considered first in the planning of recreation areas. Recreation areas should be interconnected, providing the widest choice of recreation areas safely accessible to even the youngest users.

TRANSPORTATION SYSTEM

Transportation facilities have always been a major structural element in the development of cities. Suburban Chicago development has been heavily influenced by transportation possibilities. The existence and growth of suburban areas is predicated on the transportation network's ability to connect these dispersed settlements with major regional activity centers by road and rail.

Accessibility and Land-Use

Roads and highways are a land-use designed to facilitate movement. In accomplishing this function, these facilities influence all other land-uses. Two major consequences need to be examined. First, the traffic characteristics engendered by the various levels of road facilities

(local,collector, arterial, and expressway), should conform with the land-use characteristic of a given area. Second, this hierarchy of roads confers varied degrees of accessibility to land areas. Sectors adjacent to intersections of arterial and expressways, or interchanges between expressways have the highest degree of accessibility because they can be easily reached from both local and metropolitan points. Such sectors are most suitable for high-intensity uses generating heavy traffic and needing efficient movement facilities. In contrast, there are urban land-uses which are adversely affected by heavy traffic volumes and which do not need high degrees of accessibility. The locating of arterial or expressway facilities in residential, local community, or open space areas is inconsistent with objectives for these areas.

By approaching the intensity of land-uses on the basis of accessibility,the development area will have a flexible mechanism with which to advance the compatibility of transportation activities within the pattern of urban land-use. Two transportation elements confer high accessibility in the development area. They are arterial intersections adjacent to expressway interchanges and the rail facilities providing commuter service.[5]

The following development policies are related to the transportation system:

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[5] For further detail see "Technical Supplement--DuKane Valley Area Development Study," Part 4.

Structural Policies

- The transportation network must be planned and coordinated so that major intersections confer high accessibility in areas which are appropriate for high intensity uses. The location of a high-intensity sector should be the function of natural resource criteria and community values. Future highway and rail facilities should be located within the bounds of the resource and community policies.

Functional Policies

- Arterial highways should serve local communities along their edges with collectors "penetrating" the communities.

UTILITY SERVICE FACILITIES

The provision of public water and sewerage facilities are a necessity in urbanized areas. Incorporated sections in the development area are presently served by a variety of public systems.

The provision of utility service should be carefully coordinated with natural resource limitations and potentials. Areas of high pollution potential which are not now developed should be withheld from development entirely. Areas of moderate pollution potential should have adequate utility systems before development occurs. Septic systems should be allowed only in areas of low pollution danger where land-use intensity will be very low.

The systematic programming of utilities according to planning criteria can be an effective tool in land-use control. By adopting such a program, the development area can achieve greater efficiency from

its investment and save public and private funds by avoiding the replacement and correction of inadequate or over-utilized facilities.[6]

The following development policies relate to the utility service facilities:

Structural Policies

- The provision of utility service should be used as a method of controlling development by coordinating utility planning with the Area Policies Plan.

Standards and Criteria Policies

- The DuKane Valley Area should provide adequate utility service to urbanized areas and to growth areas before development occurs.
- A detailed inventory of the location of present facilities and special problem areas should be made. Each development proposal must show that it can be adequately handled by public water and sewage facilities or be in an area which can accommodate its sanitary needs by septic systems. The utility provisions must be shown to be sufficient to safeguard the natural resources.

POPULATION AND ECONOMIC FORECAST

The "Comprehensive Development Impact Study" prepared by Real Estate Research Corporation, includes detailed population and economic projec-

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[6] For further detail see "Technical Supplement--DuKane Valley Area Development Study," Part 5.

tions for five-year intervals through 1985. These studies provide statistical breakdowns for township units.[7]

The population and economic forecast in this major study can be successfully utilized as the base forecast for the study area. Adjustments necessitated by new developments should be made on a regular basis so these forecasts remain as accurate as possible during the entire development period. The study area should redistribute forecast figures to the municipal level.

Given these changes, these studies will adequately provide appropriate information on economic and population demand and can be used as standards in development proposal review.

The following development policy relates to the population and economic forecast:

Standards and Criteria Policies

- The DuKane Valley Area should interpolate the existing population and economic studies to the municipal level. These forecasts should be updated and adjusted as the process of growth and changing circumstances necessitates. Development proposals should be reviewed

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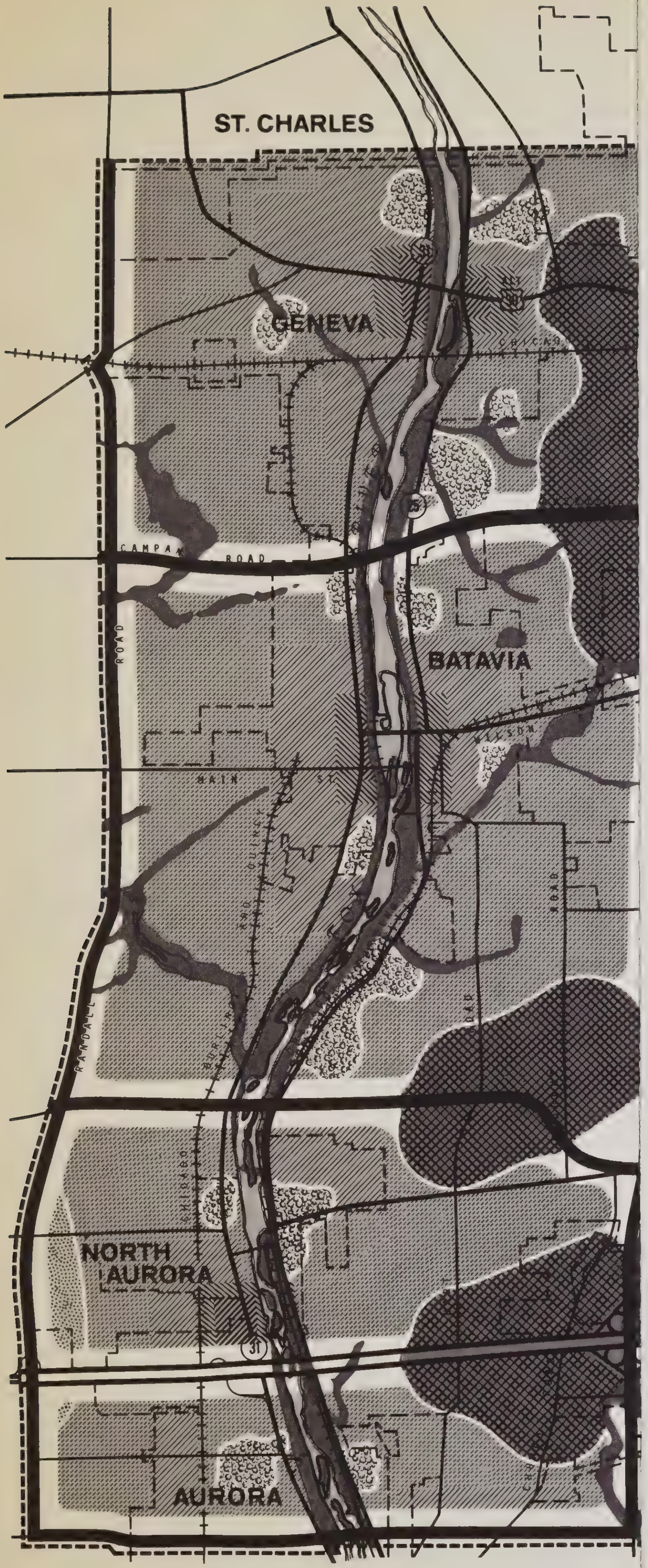
[7] This study is a 10-volume report undertaken to assist those connected with the Accelerator Study Area to plan for an orderly future by identifying the ramification the location of the NAL facility will have upon the demands for services, housing, utilities, and schools. The effect on tax revenues, economic outlook, and population growth also are analyzed in detail. Report Number V, "Projections of the Population and Economy With and Without the Accelerator," Volumes 1 and 2; and Number VI, "Projections of Land-Use, Transportation, Utility and Public Service Requirements With and Without the Accelerator," are particularly germane to the land-use development process.

for their feasibility in regard to population and economic demand at the time the development is to take place in order to protect the area against undue speculation.

DUKANE VALLEY
AREA POLICIES PLAN



AREA POLICIES PLAN

STRUCTURAL POLICIES

HIGHWAY NETWORK ✕

HIGH INTENSITY POLICY ■

LOW INTENSITY POLICY ▩

SPECIAL USE DISTRICT POLICY □

FLOODPLAINS AND OPEN SPACE ■

FUNCTIONAL POLICIES

RECREATIONAL LAND ▒

AGRICULTURAL CHARACTERISTICS ░

LOCAL COMMUNITY AND NEIGHBORHOOD CHARACTERISTICS

CENTRAL AREA ▧

EXISTING NEIGHBORHOOD ▨

FUTURE NEIGHBORHOOD ░

DENSE URBAN CHARACTERISTICS ▦

ARTERIAL POLICY ▬

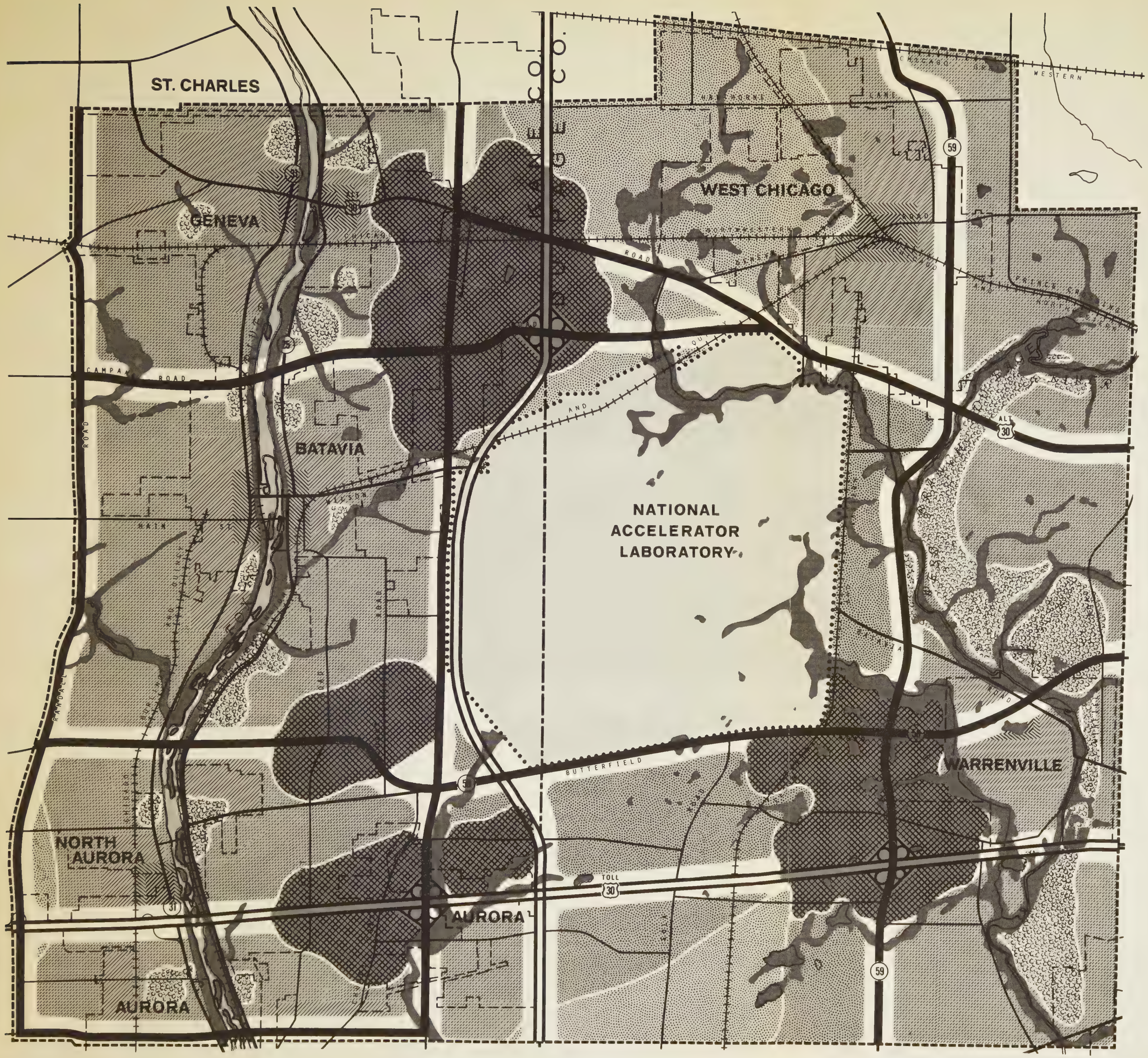
NORTH

SCALE IN THOUSANDS OF FEET
0 2 4 6 8

DU KANE VALLEY AREA DEVELOPMENT STU

FIGURE TWO

AREA POLICIES PLAN



STRUCTURAL POLICIES

- HIGHWAY NETWORK
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NORTH

SCALE IN THOUSANDS OF FEET
0 2 4 6 8

DUKANE VALLEY AREA DEVELOPMENT STUDY

FIGURE TWO

Chapter 4
DUKANE VALLEY AREA POLICIES PLAN

Development policies have been proposed for each of the major development factors. These development policies become the fundamental plan elements. They can be refined, added to, and adjusted according to new information and community deliberations. The policies range from conceptual statements to very detailed tactical objectives. Many of these policies lead to geographical application which interpret the suitability for urbanization, intensity of urbanization and urban structure objectives to land areas. The plan does not reflect areas of specific use, such as industrial districts or residential areas, as one finds in conventional land-use plans. It is the process coupled with this policy plan which provides the translation of intensity to specific use.

The Area Policies Plan is described in two sections; the transportation plan and the land-use intensity plan.

TRANSPORTATION PLAN

In addition to moving people and goods, the transportation system is a major *structural* element of the physical community which has a powerful influence on the distribution of land-uses. As a result, it must be oriented to the policies of the development area. The major

concern of transportation planning at the community level is the proper location of major highway and rail facilities as they pass through the area and the general nature of collector and local streets. The transportation plan is a combination of existing facilities, scheduled highway improvements, and proposed adjustments to the transportation system necessitated by development policy and the impact of the National Accelerator Laboratory.

Motor Vehicle Facilities

Individual communities must be served by efficient arterial road networks without introducing unwarranted and unwanted through traffic into the communities. In the transportation plan, therefore, local and collector roads are designated as the only facilities which should penetrate the communities. To provide access to the area and the region, each of the communities should be bordered by major arterial roads (see Area Policies Plan).

The location of Kirk Road south of the accelerator site and the downgrading of Roosevelt Road from Kirk Road west are important to detailed planning and should be given a high priority. The location of Kirk Road will be influenced by the Farnsworth interchange facility. This would create a point of high accessibility at the Kirk Road-Route 56 intersection which is not particularly suitable for intense development because of resource limitations. The location of Kirk Road must be carefully planned to avoid creating development pressure on this unsuitable land and still use the existing interchange.

Arterial roads also should serve to physically delineate communities in the area. In this way, the individual communities can retain their identity and unique character.

These arterials connect the local communities to the regional transportation network, which consists of the East-West Tollway, the Fox Valley Expressway, and the commuter railroads. Transportation improvements should be scheduled so that they will help influence development of land.

The location of the National Accelerator Laboratory has produced a difficult transportation situation for Batavia, and Campana-Averill Road should have first priority for improvement in the arterial network.

Scenic highways should be developed where major collectors and arterials pass through areas of unique beauty. This is particularly true for Routes 31 and 24 as they wind along the Fox River, Route 59 as it skirts the edge of the DuPage Forest Preserve, and Butterfield Road as it passes the southern border of the National Accelerator Laboratory.

Internal road systems should be developed so that they connect with bordering arterials. Collectors should have capacity adequate to ensure efficient traffic movement in each community. They should be designed to run parallel to major pedestrianways, particularly those connecting residential areas with school-park facilities so that children cross a minimum number of streets with high traffic volumes.

Rail Transportation

The area is served by two commuter railroads and a number of freight lines. The Chicago and North Western serving Geneva and West Chicago,

and the Burlington to the south of the development area, are important elements of the transportation system. Continuation,and even expansion, of this service should be encouraged. The Chicago and North Western should consider locating a new commuter "park-and ride" facility in the high-accessibility sector created by the rail line, as well as Kirk Road, Roosevelt Road, and the Fox Valley Expressway. Such a facility would serve Batavia, Geneva, St. Charles, West Chicago, and North Aurora. It would reduce the need for parking space in local business districts and channel the train station-oriented traffic onto arterial facilities.

Freight spurs and lines should be carefully analyzed to determine if they can be consolidated to alleviate unnecessary traffic barriers. A long-range study should be made to determine the feasibility of restructuring the unconnected rail facilities extending north and south along the Fox River from Aurora to Geneva. These facilities might be used as a basis for a future mass transit system serving the Fox Valley urban corridor.

LAND-USE INTENSITY PLAN

The land-use intensity plan classifies the study area into high- and low-intensity and special use sectors. The special use sectors include areas of conservation and recreation land.

High-Intensity Sectors

High-intensity sectors can be located at the points where transportation facilities offer the highest accessibility. Theoretically, these

sectors would be circular areas of one-mile radius. The sectors are imperfect, however, because of development limitations imposed by such factors as topography, availability of sewer and water lines, etc. Each centers upon one or more major arterial intersection adjacent to a freeway interchange. Three high-intensity sectors are designated in the DuKane Valley Development Area. The Campana-Averill-Kirk-Roosevelt Road sector is additionally strengthened by the location of the North Western commuter line. It should be the sector of highest intensity uses.

It is in these areas that high-intensity land-use which needs a sophisticated transportation system and high accessibility, should be located. Low-intensity land-uses, such as low-density residential, should not be located in these sectors. Land-uses suitable for high-intensity sectors can include the full range of urban activities. The critical standard should be the *level of intensity* at which the land-uses are developed. Appropriate residential land-use for inclusion in high-intensity sectors would be high-density development in the range of 32 dwelling units per acre, or medium-density developments in the range of eight to 14 dwelling units per acre. High-density industrial parks also are appropriate uses for such sectors. Research and office facilities which generate heavy traffic also should be located in high-intensity sectors.

Certain community facilities should be located in high-intensity sectors as well. These would include hospitals, health centers, certain government offices such as county police headquarters, state police area

headquarters, county court facilities, and generally those uses which serve an area broader than a specific community. Finally, the high-intensity sectors are appropriate places for regional activity centers which may include entertainment, cultural, commercial, and office facilities. Within any given sector, a mix of uses should be promoted to engender convenience to area-wide users and efficiency in land-use.

As an area within a high-intensity sector develops, it begins to limit the types of development which are suitable for adjoining land because of the need to avoid land-use conflicts. As sites are developed in a sector and the necessary services are provided, the rationale for assigning specific uses comes to bear on associated or neighboring undeveloped areas within the sector. However, in most cases, the types of uses designated as suitable for high-intensity sectors will not conflict with each other if proper sector planning and careful and sensitive design are carried out according to the policies of the development program.

Low-Intensity Sectors

Low-intensity sectors can be identified on the basis of a number of criteria. These areas are most suitable for a low-intensity urban development because they have a relatively low degree of accessibility, a limited resource suitability for urbanization, or both. Areas which serve as open space separating the communities also should be developed at a very low intensity so individual communities can maintain a physical as well as political identity. Since the transportation plan is keyed to

community value policies and land suitability policies, more than one of these reasons usually apply to low-intensity sectors.

Land-uses which are suitable for low-intensity areas would include agriculture; low-density detached housing; clustered housing, based on average density provisions; estate development; and other community-oriented uses such as locally-oriented schools, churches, and "convenience commercial" centers serving neighborhood units. The development area should consider handling all low-intensity sectors as planned neighborhood developments under the cluster design so that these areas can be absorbed harmoniously by both the communities and the landscape.

Special Use Sectors

Some planning areas have characteristics which require that they be used for special purposes. These are areas which should be set aside as parks, recreation areas, and open space, and the land having natural resource limitations which prohibit any type of urban development.

Recreation and Park Land

Development should not be permitted on existing and planned recreation areas, riparian land, and areas in the 50-year floodplain. Many of the attributes which give the DuKane Valley Area its beauty and character, exist in these locations. Furthermore, these areas have natural characteristics which, most severely, limit suitability for urban uses because of flooding, pollution potentials, mineral deposits, foundation problems, and alluvial soil conditions. These determinants add to the rationale behind the policy of restricting development in these areas.

This land can serve a very important function for the community. It should be considered as an appropriate place for the development of recreation and park land. The strips of floodplain land surrounding natural drainage ditches or streams can be developed within the local community patterns to provide separated pedestrianways. Such a natural pattern easily can be connected to school locations within neighborhood developments, thus reinforcing safety and the availability of nature. These areas also will protect waterways and land areas from pollution and provide dispersed "sponge" districts for the necessary recharge of the Silurian dolomite aquifer. Dual uses for this land can be worked out so it becomes an asset rather than a liability to the community.

Conservation Areas

Certain areas within the DuKane Valley offer extremely severe limitations for urban development. The consequences of allowing any type of land-use which involves the construction of buildings, streets, sidewalks, etc. can be most serious and costly. In the development area, however, this agriculture land has some of the most productive soil in the state. It should be designated as conservation areas, with agriculture the only permitted use. Three such areas exist in the DuKane Valley Area. They are the flat land west of West Chicago (terminating east of Kirk Road); an area south of the East-West Tollway between Aurora and Naperville; and a section just west of North Aurora.

Arterial Districts

Arterial districts are not separate and distinct sectors, but rather this term refers to the land adjacent to arterial highways. Arterial districts overlay the intensity sectors. They refer to a method of managing land along the roadside. The technique of management is different for each intensity sector. The roadway's primary function is to handle traffic efficiently. This function can easily be impaired by the lack of control over commercial strips and intense land-uses along the arterial. To the east of the DuKane Valley Area, strip development has occurred along Ogden Avenue and Roosevelt Road to such an extent that it has severely limited efficient traffic movement.

The second reason for creating these districts is that the character of the study area will be perceived to a great extent from arterial highways. If garish strip development is allowed to obliterate the landscape, the public's opportunity to enjoy the natural environment and benefit from its stabilizing and identifying influences will be decreased substantially. Therefore, special controls over land-uses, the pattern such uses should follow, and the number of curb cuts entering the roadway are necessary.

There is, however, a need for various types of land-uses along arterial highways. The arterial district policy should permit necessary roadside facilities but development should be guided so that strips are avoided and services are concentrated in nodes located at appropriate locations. In addition to commercial facilities, office-research and light industrial developments have a place in arterial districts if

they have a very high ratio of land to building square footage. In this way, a minimum number of curb cuts would be created and, at the same time, visibility standards would be maintained. The location of work space near living areas will give individuals the option of working close to their homes. In addition to these methods, scenic highway controls should be established at strategic areas along arterials. Existing park-like institutions which are located along arterials should be encouraged to maintain their present use of the land, further strengthening the establishment of open areas between service nodes.

In many areas, forest preserves and parks exist within these arterial districts. They should be maintained so that the spacing of appropriate service nodes is given a basic structure. Where parks exist in arterial districts, multi-family housing can be located nearby so that future apartment dwellers will have the advantage of recreation space immediately at hand. Traffic generated by these higher densities will have efficient access due to their proximity to arterial roads.

The final land-use pattern of an arterial district should evolve as specific sites are developed. If a particular arterial district is undeveloped, the first service node could be located at any appropriate place. But as sites are built up, limitations should be placed on the development of adjacent tracts of land so that arterial district objectives can be met.

A number of mechanisms can be used to implement these policies. Outright purchase of land for expanded park and open space facilities should be considered. The community can purchase easements specifying the uses as it becomes necessary to restrict development adjacent to service nodes.

Another method would be the zoning of arterial land in such a fashion that any development proposal would necessarily include a predetermined open area to either side of a built-up node.

DEVELOPMENT ZONING PLAN

The Development Zoning Plan is a direct reflection of the methods suggested for organizing the development process. The purpose of including this section is to outline the direction zoning should take. The implementation of the planning program suggested in this report would require the design of specific legal tools.

The zoning plan divides the development area into two zoning areas. These will be established by the formal location of the development frontier. In built-up areas, conventional zoning administered by municipal authorities should continue to prevail. On the undeveloped side of the frontier,it is suggested that a somewhat altered zoning procedure be implemented.

These two zoning areas could most easily be coordinated if city limits were used as the development frontier. However, the development area should consider making whatever jurisdictional adjustments or coordinating pacts necessary to establish the frontier according to the existing conditions of development rather than less responsive political boundaries.

1. *Developed Areas.* The municipalities handling zoning in built-up areas should coordinate their zoning provisions as much as possible. If zoning throughout the area is equally permissive and restrictive for similar situations, private decision-makers will be more prone

to act according to area-wide development factors instead of "getting the best deal around." There are, of course, situations and areas where zoning should deviate from the norm.

2. *Undeveloped Areas.* The development process hinges on the concept of determining appropriate use only when that use is actually going to become a reality. A strengthened rezoning process offers the best mechanism to achieve this objective. The counties should establish a special zoning district which, at this time, will be handled differently from other areas within the county. The location of the accelerator laboratory can serve as the rationale for making this distinction. Zoning precedents for special zoning districts have been established. Land area around state capitals, architectural landmarks, airports, and a variety of other major installations have been zoned in special categories with much success.

   The undeveloped area should be zoned in a series of holding zones which indicate (1) that rezoning is necessary before development can take place, and (2) the level of intensity the Area Policies Plan designates to the zone.

   All areas,except recreation and open space land, should be placed in one of three agricultural zones. Agricultural activity would be a matter of right in each of these. High-intensity sectors should be placed in a zone tentatively titled, "Agriculture H.I." The zoning ordinance would stipulate a series of permitted uses to which a developer could apply to under this zone. The land in this zone

should be assessed according to its land value as a "H.I." sector reinforcing the objective of keeping low-intensity uses out of the sector.

Low-intensity sectors would be in an "Agriculture L.I." zone. Again, certain permitted uses in line with the Area Policies Plan would be available under the rezoning process.

A study should be undertaken as soon as possible to identify in detail land which should become permanent open space in recreational and conservation areas. This land should be zoned as present and future land within the public domain. Floodplain zoning restricting all development should be applied to the land within the 50-year floodplain.

It also is recommended that all jurisdictions incorporate Planned Unit Development districts and average-density provisions in their zoning ordinances to encourage quality site planning.

5

IMPLEMENTATION

Chapter 5
IMPLEMENTATION

The overall guidance of the development process would be the responsibility of the local plan commissions which can coordinate their efforts through the DuKane Valley Council Planning Committee, a new plan commission or informal intercity cooperation. Of absolute necessity is the continued cooperation between the development area communities. If planning is to be geared to optimal land-use rather than taxes, the communities must realize that they have mutual concerns which can only be realized through a process of give and take. Elementary in this cooperative effort should be the establishment of future boundary agreements between neighboring communities so that future annexation will prove equitable for all political units. If a high-intensity area is located between two towns, it is obvious that each town will attempt to incorporate this high tax-producing area. The ensuing competition and associated maneuvering can easily lead to the disregard of public values and a patchwork of spot zoning fostering inefficient and, many times, ugly development.

1. The staff function necessary to organize the detailed inventories, make recommendations for development policy changes, and coordinate the process of development proposal review, can be handled either

by establishing a new agency or coordinating existing agencies. The DuKane Valley Area communities and the two counties could establish a development agency which will be charged with carrying out the necessary work to coordinate the development program. The new agency would be charged with securing the detailed inventories necessary for site review and with reviewing all proposals against these standards and the Area Policies Plan. The staff would be responsible to the specific local community when the proposal falls within the community's future boundaries. The county would adopt the role of functioning as a steward, guarding the municipality's objectives until the time that the development becomes part of that community. The staff also would be charged with making recommendations to keep the development policies and Area Policies Plan up-to-date and keep local developers informed on policy, development procedures and available information. Finally, the development staff could offer its services to the local communities for local planning.

The main advantage of a single staff devoted only to development activities would be the efficiency and convenience of having all pertinent information and process knowledge at one place easily accessible to developers and local officials. It would involve enough responsibilities to justify professional manpower. Finally, the single agency responsible to both the counties and all communities would be less subject to narrow interest group pressure and be forced to remain occupied with area-wide interests.

2. A second alternative would be to assign the development staff function to county planning agencies. This method does not create another level of government staff superimposing itself upon the numerous public agencies already in existence. Since most of the undeveloped land is presently under county jurisdiction, the county already has the public responsibility of coordinating this development. Kane County presently has a planning staff in operation and DuPage County is committed to establishing a planning agency. Therefore, a structure for the development staff function already exists at the county level. Having only two agencies would make coordination reasonably effective and convenient to development particpants.

3. The local communities could set up the staff function by coordination and mutual agreement. This could be accomplished by establishing a committee which would coordinate all development area information and would provide guidance to the review process within their area of present and future jurisdiction. Staff personnel such as city engineers, public service directors, planners, and other appropriate city and county employees could coordinate their efforts to make the development program work. However, an extremely sophisticated degree of communication would be necessary to make this alternative function properly.

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